METHOD AND APPARATUS FOR LOADING AND UNLOADING MATERIAL FROM A STORAGE MEDIUM

FIELD OF THE INVENTION

The present invention relates to an improved method and apparatus for transferring materials between storage mediums. More particularly, the present invention relates to a self-contained portable apparatus capable of being moved to the location of a railroad tank car for unloading material from the railroad tank car into another liquid storage medium.

BACKGROUND OF THE INVENTION

The process of loading and unloading material from railroad tank cars has typically been accomplished at a rail yard or terminal. The need for a rail yard or terminal to load and unload railroad tank cars is both costly and time consuming. First, the construction of a rail yard or terminal can be both expensive and time consuming. Problems associated with developing a rail yard or terminal include finding a suitable place to build the yard or terminal. To find a suitable place, an entity must first find a significant amount of land to construct the terminal in an area zoned to allow for such construction. Furthermore, the zoned areas may not be close to an area the entity wishes to deliver the tank cars, thereby increasing transportation costs after unloading. Next, the entity must successfully maneuver through the permit process, mindful that neighborhood associations in the surrounding area and government agencies may be against the development of a railroad terminal. Then, the entity must locate a financing source to fund the construction of the yard or terminal. Construction costs include the laying of track; infrastructure improvements, including buildings, gangways, and material storage facilities; and the lease or purchase of locomotives to maneuver the railroad tank cars into a position where they

can be unloaded. Finally, a great deal of time must be taken to construct the rail yard or terminal with no guarantee how long the facility will be financially viable.

Second, a typical rail yard or terminal can take a great amount of time to load or unload multiple rail tank cars. Even if the terminal has multiple loading and unloading stations, these stations are typically fixed in place. Thus, when a first railroad tank car is finished being loaded or unloaded, a locomotive must be used to move the first railroad tank car out of the station, retrieve a second railroad tank car from another area, and move the second railroad tank car into the station. The amount of time can be further exacerbated by the fact that rail cars are not always delivered to a terminal in an order that allows for the efficient carrying out of the loading and unloading process. The need to maneuver rail cars also requires a greater amount of space at the terminal, thereby further increasing the cost.

Third, the demand for some types of material is seasonal and dependent on the area of the country. Thus, while a company may find a need to deliver a high quantity of cars during some months of the year, the same company may need to make few if any deliveries in other months. Such fluctuations can keep the building of a rail yard of terminal from being cost effective. Furthermore, the ability to load or unload a railroad tank car quickly and efficiently in close proximity to the material's final destination would reduce overall transportation costs and increase profitability.

Recently, parties who transfer liquid from railroad tank cars have been allowed to transfer the liquid directly from the tank car to another mobile storage medium, such as a tanker truck. Thus, unloading operations are no longer required to first transfer the liquid from the railroad tank car to a large, stationary holding tank and then transfer it to a second mobile storage medium. The ability to directly transfer from one mobile container to another has both eliminated the need for large scale holding tanks and the fixed unloading stations build in their vicinity. Now, as long as a second mobile storage medium can be positioned near the railroad tank car, any place can be a loading or unloading site, as long as the equipment necessary for

transferring the liquid can also be maneuvered into the same general area as the railroad tank car and the second mobile storage medium.

Some entities have attempted to eliminate the need for a rail yard or terminal by developing a conventional mobile platform to hold equipment necessary for unloading a railroad tank car. To unload a railroad tank car using a conventional mobile platform, a user could move the mobile platform into a position near the railroad tank car. The equipment necessary to unload the railroad tank car could then be unloaded off of a transport platform and assembled on the conventional mobile platform. Once the unloading process is completed, the equipment can be dismantled and loaded back onto the transport platform and the conventional mobile platform can be towed away.

While the mobile platform may be an improvement both in cost and time consumed in unloading railroad tank cars it still has several drawbacks. First, the mobile platform usually requires A/C power to operate. This means that the conventional mobile platform can never be used in rural areas devoid of electrical hook-ups. Second, if a user wants to take the mobile platform on a road or highway, the unloading equipment usually is dismantled from the mobile platform and placed on a transport platform attached to a vehicle for transport. Thus, extra time can be consumed in building and dismantling the mobile platform at each unloading site. Therefore, the mobile platform cannot be characterized as completely portable.

In view of the foregoing, there is a need for a portable liquid material transfer unit that can access rail cars of differing heights, can be moved to any area accessible by motorized vehicles, and can quickly and easily be prepared for transport on a road or highway after use.

SUMMARY OF THE INVENTION

The present invention overcomes the deficiencies of conventional railroad material transfer stations and newer mobile material transfer platforms by providing a completely portable material transfer unit that can be moved to any area accessible by

motorized vehicles. The material transfer unit is characterized as portable because the material transfer unit typically does not require A/C power to operate, but instead can derive its power to transfer material from the rail tank cars from a gasoline or diesel engine that can be supplied from a fuel tank on the material transfer unit. Furthermore, re-positioning of a tank car access platform, that can be slidably adjusted and vertically adjusted, is all that is typically needed to make the material transfer unit ready for the highway.

For one aspect of the present invention, a portable material transfer unit can include a mounting platform. The mounting platform can be metallic and provide sufficient support for attaching additional components to the platform. An axle and multiple wheels can be attached to the mounting platform to provide a mechanism for moving the mounting platform from one position to the next.

An access platform can be attached to the mounting platform. The access platform typically resembles a stairway that can have a gangway attached to the top of the stairs. The height of the access platform can be fixed or adjustable. For access platforms having adjustable heights, the height of the access platform can be adjusted to facilitate the attachment of material transfer piping and/or flexible hosing to storage mediums having a range of heights. The access platform height can be adjusted through the use of pneumatic, hydraulic, electrical, or mechanical power. In one exemplary embodiment, the access platform is a tank car access platform.

A compressor can be placed on the mounting platform. The compressor typically generates a pressure differential between a first and a second storage medium that can assist the material in flowing from the first to the second storage medium. The compressor can also provide pneumatic pressure to the access platform to assist in the adjustability of the access platform. Additionally, a set of piping or hoses can be placed on the mounting platform. The piping or hoses can provide a conduit through which material can pass from one storage medium to another. Furthermore, the set of piping or hoses can be attached to the storage mediums and

the compressor to generate a pressure differential, that can assist the flow of material between storage mediums.

For another aspect of the present invention, a method for employing the portable material transfer unit can include transporting the portable material transfer unit to a first location. The portable material transfer unit can be transported using a car, truck, or other type of motorized vehicle. Once at the first location, the portable material transfer unit can transfer material from one storage medium to another. The portable material transfer unit can be transported to a second location. The second location is typically different from the first location. At the second location, the portable material transfer unit can transfer material from one storage medium to another. The storage mediums can be railroad tank cars, tanker trucks, or fixed storage tanks.

Another aspect of the present invention includes transporting the portable material transfer unit adjacent to a first storage medium. The portable material transfer unit can be employed to transfer material to or from the first storage medium in a transfer operation. Once the transfer operation is completed, the portable material transfer unit can be transported adjacent to a second storage medium for another transfer operation. In one exemplary embodiment, the first and second storage mediums are at the same location, such as a rail yard or terminal. The unit can be transported by towing the unit with an automobile, truck, or other motorized vehicle.

For yet another aspect of the present invention, the portable material transfer unit can be employed to evacuate material and vapor from a storage medium to allow for periodic repairs and maintenance of the storage medium.

Another aspect of the present invention includes the ability of reversing the pressure differential flow generated by the compressor on the portable material transfer unit after the material has been transferred. Reversing the pressure differential flow can allow for the retrieval of material vapor that remain in the

storage medium. The retrieval of the material vapor can result in a more efficient retrieval of product from the storage medium.

For another aspect of the present invention, the portable material transfer unit can be transported to a remote location to evacuate a storage medium under an emergency situation. The emergency situations can include a rail tank car that has derailed or an overturned tanker truck. Use of the portable material transfer unit during the emergency situation would not require placing the storage medium in its upright position prior to transferring the material. Since the portable material transfer unit employs a pressure differential to transfer materials, material can be transferred from a storage medium even if the storage medium is laying on its side.

The aspects of the present invention may be more clearly understood and appreciated from a review of the following detailed description of the exemplary embodiments and by reference to the drawings and claims.

BRIEF DESCRIPTION OF DRAWINGS

For a more complete understanding of the present invention and the advantages thereof, reference is now made to the following description in conjunction with the accompanying drawings in that:

Fig. 1 depicts a side view of a portable material transfer unit in accordance with an exemplary embodiment of the present invention;

Fig. 2 depicts an overhead view of the portable material transfer unit in accordance with an exemplary embodiment of the present invention;

Fig. 3 depicts the unloading of a material from a rail car to a tanker truck using the portable material transfer unit in accordance with an exemplary embodiment of the present invention;

Figs. 4A and 4B depict a side view of a telescoping platform and access of the portable material transfer unit in accordance with an exemplary embodiment of the present invention;

Fig. 5 depicts a side view of a method for transporting the portable material transfer unit to a material transfer site in accordance with an exemplary embodiment of the present invention; and

Fig. 6 depicts an overhead view of a method for transporting the portable material transfer unit to a material transfer site in accordance with an exemplary embodiment of the present invention.

DETAILED DESCRIPTION OF THE EXEMPLARY EMBODIMENTS

The present invention supports the transfer of materials from a railroad tank car through the use of a portable apparatus as can be more readily understood by reference to the representative apparatus illustrated in Figs. 1 and 2. Fig. 1 is a side view of a portable material transfer unit ("material transfer unit") **100,** in accordance with an exemplary embodiment of the present invention. Fig. 2 is an overhead view of the mobile material transfer unit **100** in accordance with an exemplary embodiment of the present invention. The material transfer unit **100** can include a mounting platform **102** upon that other parts of the material transfer unit **100** are affixed. In one exemplary embodiment of the present invention, the mounting platform **102** is formed by a first set of two horizontal parallel members **103** attached orthogonally to the ends of a second set of two horizontal parallel members **105**. A top plate **101** can comprise a layer of diamond-plate sheet metal that is attached to the top of the first and second set of two parallel horizontal members **103** and **105** to form the mounting platform **102**. The top plate **101** can be attached to the first and second set of two parallel horizontal members **103** and **105** with fasteners, such as nuts, bolts, or screws, or welding.

A trailer hitch **104** is attached to the mounting platform **102** by two converging members **107**, **109**, each converging member **107**, **109** being attached at one end to the bottom side of the mounting platform **102** and converging at a point wherein the trailer hitch **104** and the converging members **107**, **109** are attached together. The converging members **107**, **109** typically comprise square metal tubing

attached to the mounting platform **102** and the trailer hitch **104**. The converging members **107, 109** can be fastened to the mounting platform **102** and the trailer hitch **104** by fasteners or welds. A third member **111** can attach the converging members **107, 109** approximately at the midpoint between the trailer hitch **104** and the mounting platform **102**. The third member **111** typically connects the converging members **107, 109** in a line perpendicular to a shortest line drawn from the trailer hitch **104** to the mounting platform **102**. The third member **111** provides improved stability and support to the converging members **107, 109** and can be attached to the converging members **107, 109** via fasteners or welds.

Wheels **106** are attached to an axle **107** and further attached to the bottom side of the mounting platform **102**. The wheels **106** are positioned to rotate in a direction parallel to the second set of parallel members **105** and can be positioned at a point approximately equidistant from the endpoints of the second set of parallel members **105**. Furthermore, the wheels **106** are positioned outside of the mounting platform **102** and can be covered by fenders **113**. The wheels allow the mounting platform **102** to be transportable on roads or highways of any kind, including dirt roads.

Equipment attached to the mounting platform **102** comprises emergency shutdown activators **108**; nitrogen canisters **110**; fire extinguishers **114**; a tank car access platform **116**; a compressor **124**; piping or hoses **126, 132A, 132B, 134**; piping connectors **130, 136**; a grounding system **140**; mounting brackets **112, 138**; and a fuel tank **204**. In one exemplary embodiment, piping can include metal and plastic piping, hoses, tubing and flexible hoses.

Emergency shutdown activators **108** provide a user the ability to immediately stop the transfer of fluid from a tank car to a tank or tanker truck. Emergency shutdown activators **108** are placed on the mounting platform **102** and the tank car access platform **116**. The emergency shutdown activators **108** attached to the tank car access platform **116** are positioned in a way such that the emergency shutdown activators **108** can be depressed by a user either standing on the mounting platform **102** or a gangway **202**. The emergency shutdown activators **108** can be mounted to

the tank car access platform **116** with fasteners that may include nuts and bolts. The emergency shutdown activators **108** positioned on the mounting platform **102** and third member **111** can be mounted to a vertical member **117** with fasteners that may include nuts and bolts. The vertical member **117** is attached to the mounting platform **102** and the third member **111** through the use of welding or fasteners. The vertical member **117** typically comprises steel square tubing. The emergency shutdown activators **108** comprise safety valves that activate various shutdown valves on the unit **100**. In one exemplary embodiment the emergency shutdown activator **108** comprises a push button valve that activates an emergency shutdown system.

Nitrogen canisters **110** can be placed at the front end of the mounting platform **102**. The nitrogen canisters are positioned next to a mounting bracket **112** and held in place against the mounting bracket **112** using strapping or metal brackets with fasteners, such as nuts and bolts (not shown). The mounting bracket **112** can comprise two pieces of steel square tubing, running in the vertical direction, welded to a horizontal piece of steel square tubing at the top of the two vertical pieces. The nitrogen canisters **110** are filled with nitrogen gas, that assists both in the operation of the safety equipment on the mounting platform **102** and in shutting down the pipe loading system. Multiple fire extinguishers **114** are fastened to the mounting platform **102** with a mounting bracket (not shown) and fasteners that may include nuts and bolts.

The tank car access platform **116** comprises multiple stairs **118**, a landing **122**, a gangway **202**, and guard rails **120**. The tank car access platform **116** provides a user with the ability to access the top of a railroad tank car by walking up the stairs **118** and onto the landing **122**. The user then walks onto the gangway **202**, that extends beyond the mounting platform **102** in a direction perpendicular to the rolling direction of the wheels **106**. Furthermore, the tank access platform **116** can be of a type capable of being adjusted to a greater or lesser height depending on the position of the mounting platform **102** in relation to a rail tank car and the height of the rail tank car. Height adjustability allows a user to safely and easily access the tank car

valves from the gangway **202**. The tank access platform **116** can be attached to the mounting platform **102** with multiple mounting plates and fasteners (not shown). In one exemplary embodiment, the tank access platform **116** comprises a BALLYMORE adjustable, hydraulic stair and gangway unit.

A compressor **124** is attached to the mounting platform **102** with mounting plates and fasteners (not shown). The compressor **124** can include an engine or motor and a clutch assembly. A first pipe or hose **134** runs from a breakaway header **138** into the compressor **124**. A second pipe or hose **126** runs from the compressor **124** to a first flexible hose **129A** that runs up the side of the tank car access platform **116** and is capped with an attachment valve **130** that can be attached to a emergency shutdown valve (not shown). In one exemplary embodiment, the compressor **124** comprises a CORKEN Model 691 LPG Vapor Compressor; a DEUTZ 47 horsepower, 3 cylinder, air cooled engine; and a TECHNODRIVE Model BD130/50 clutch. The first and second hose or piping **134**, **126** typically comprise two-inch diameter hoses or piping. In one exemplary embodiment, all pipe-to-pipe connections, pipe-to-flexible hose connections, pipe-to-breakaway header **138** connections, and pipe-to-rail car, tanker truck, or storage tank connections include swivels that allow for the rotational movement of the pipe or flexible hose into position to facilitate a connection.

A third hose or piping **132A** runs from the breakaway header **138** to a second flexible hose **129B**, that is capped with an attachment valve **130**. The third hose or piping **132A** and the second flexible hose **129B** can comprise two-inch diameter hoses or piping that can support high pressure, liquefied petroleum. A fourth hose or piping **132B** runs from the breakaway header **138** to a third flexible hose **129C**, that can be capped with an attachment valve **130**. The fourth hose or piping **132B** and the third flexible hose **129C** can comprise two-inch diameter hoses or piping that can support high pressure, liquefied petroleum. The breakaway header **138** comprises a first and second piece of steel flatbar extending vertically from the mounting platform **102** and a third piece of steel flatbar attached orthogonally to the top of the first and second piece of steel flatbar and laid in a direction parallel to the rolling direction of

the wheels **106**. The breakaway header **138** can be attached to the mounting platform **102** through the use of welding or fasteners. Multiple piping connectors **136** can include both standard shutdown valves and emergency shutdown valves. The multiple piping connectors **136** are attached to the breakaway header **138** and accept connection of the first, third, and fourth pipes or hoses **134**, **132A,** and **132B**. The piping connectors **136** typically contain a valve for starting and stopping the flow of vapor or liquid. A fuel tank **204** is attached to the mounting platform **102** through the use of mounting brackets and fasteners (not shown). The fuel tank **204** provides the ability to store fuel for use when the portable material transfer unit **100** is located in an area that does not have access to other fuel or electrical sources to power the compressor **124.** In one exemplary embodiment, the fuel tank **204** comprises a fifty-five gallon fuel storage tank. Furthermore, the fuel tank **204** can be connected to the compressor **124** so that fuel is directly supplied to satisfy the compressor's **124** fuel needs.

The mobile material transfer unit **100** can be maneuvered near a rail tank car at a first location, such as a rail yard, terminal, or railroad spur. The mobile material transfer unit **100** can transfer the material from the rail tank car to another storage medium, such as a tanker truck. In one exemplary embodiment, the material is liquefied petroleum gas. Once transfer of the exemplary liquefied petroleum gas ("LPG") is completed, the compressor **124** can be reversed so that the LPG vapor can be removed from the rail tank car to the tanker truck. The retrieval of the vapor from the rail tank car results in additional material being removed thereby increasing the efficiency of the unit **100**. The reversal of flow to capture the vapor from the rail tank car can be easily accomplished by reversing the direction of the compressor **124**. Once all material, which can include vapor, has been removed from the rail tank car, the mobile material transfer unit **100** can be maneuvered to another rail tank car at the current location. This process can continue until all material at the first location, that an operator desires to unload from rail tank cars, is transferred. Completion of the transfer operation does not require that all the material be removed from the rail tank

car. Additionally, the mobile material transfer unit **100** can be transported to second, third, and fourth locations where the unit can transfer material from other rail tank cars. The mobile material transfer unit **100** can be transported to the second, third, and fourth locations via a highway, public access road, or dirt road. During the transfer operation, the material can be transferred to another storage medium, such as a tanker truck, storage tank, or another rail tank car. It will be obvious to those of ordinary skill in the art that the process of transferring material using the mobile material transfer unit **100** is not limited by the number of transfer operations occurring at a single location or the number of locations to which the unit **100** is maneuvered for a transfer operation. Furthermore, it will be obvious to those of ordinary skill in the art that the process of transferring material using the mobile material transfer unit **100** is not limited by the distance between locations since the mobile material transfer unit **100** can be transported over any surface accessible by motorized vehicle.

Fig. 3 depicts the transfer of a material from a rail tank car **302** to a tanker truck **308** using the portable material transfer unit **100** in accordance with an exemplary embodiment of the present invention. In the exemplary embodiment, the material transfer unit **100** is placed between the rail tank car **302** and the tanker truck **308**, but the placement of the material transfer unit **100** is a function of the position of the valves on the rail tank car **302** and the length of the pipes or hoses **310A**, **310B**, and **314** running from the tanker truck **308** to the piping connectors **136**. For example, in another exemplary embodiment, the rail tank car **302** could be in between the material transfer unit **100** and the tanker truck **308** if enough piping or hose **310A**, **310B**, and **314** was available to run from the tanker truck **308** to the piping connectors **136**.

The material transfer unit **100** is moved to a position alongside the rail tank car **302** so that the gangway **202** can access the tank car valves **306A**, **306B**, and **306C**. The first flexible hose **129A**, that runs to the compressor **124**, is attached to a first rail tank car valve **306A** using piping connector **130**. A second and third flexible

hose **129B** and **129C** are attached to a second and third rail tank car valve **306B** and **306C** respectively, using piping connector **130**. A fourth flexible hose **310A** is attached at one end to the third pipe or hose **132A** using piping connector **136** and at the other end to a tanker truck valve **312**. A fifth flexible hose **310B** is attached at one end to the fourth pipe or hose **132B** using piping connector **136** and at the other end to a tanker truck valve **312**. A sixth flexible hose **314** is attached at one end to the first pipe or hose **134** using piping connector **136** and at the other end to a tanker truck valve **316**. A user turns on the compressor **124** that takes vapor from the tanker truck **308** through the hose **314** and first pipe or hose **134** to the compressor **124**. The compressor **124** compresses the retrieved vapor and sends the it to the rail tank car **302** through the second pipe or hose **126** and first flexible hose **129A**. The vapor added to the rail tank car **302** increases the pressure inside the rail tank car. A pressure differential is created between the rail tank car **302** and the tanker truck **308**. The pressure differential causes the material in the rail tank car **302** to flow through the second and third flexible hoses **129B** and **129C** to the third and fourth piping or hoses **132A** and **132B** respectively, through the fourth and fifth piping or hoses **310A** and **310B**, and into the tanker truck **308**. Once the material has been removed, the compressor **124** can be reversed to pull the vapor from the rail tank car **302**. Reversing the compressor **124** and removing the vapor eliminates the need to burn off the vapor and increases the efficiency of the amount of material removed from the rail tank car **302**. In one exemplary embodiment, the material being transferred is liquefied petroleum gas. The mobile material transfer unit can also transfer other liquid materials including propane, butane, and anhydrous ammonia. Those skilled in the art will recognize that the transfer of some types of liquid material will require the use of specific types of metal piping, hoses, and fittings. Those skilled in the art will also recognize that the present invention may be implemented between any two material storage mediums to transfer material from one storage medium to another. Furthermore, those skilled in the art will recognize that a multitude of liquid materials can be transferred using the mobile material transfer unit **100**

Figs. 4A and 4B depict a side view of an exemplary telescoping platform and access **116** for the portable material transfer unit **100** in accordance with an exemplary embodiment of the present invention. Fig. 4A shows the tank car access platform **116** in a lowered position where a user can access the tank car access platform **116** from the mounting platform **102** by walking up the stairway **118** to the landing platform **122** and the gangway **202**. The stairway **118** can be attached to a tank car access platform frame **401** by welding or the use of fasteners that may include nuts and bolts. Fig. 4B depicts the tank car access platform **116** in the raised position. The raised position allows the user to access the top of a rail tank car that can be at a height greater than the rail car access platform **116** in the lowered position. Hydraulic pressure can be used to raise and lower the tank car access platform **116** to a height that allows a user the best access to the top of a rail tank car **302**. The tank car access platform **116**, in the unloading position, is attached to the mounting platform **102** with mounting plates and fasteners that may include nuts and bolts (not shown).

Guard rail **120** is formed by four vertical parallel members **403** attached orthogonally to the gangway **202**. A first set of three horizontal parallel members **405** are attached orthogonally to the upper ends of the four vertical parallel members **403**. The first set of three horizontal parallel members **405** can also be attached to each other orthogonally at their endpoints. A second set of three horizontal parallel members **407** can be attached to the four vertical parallel members **403** orthogonally at the approximate vertical midpoint of the four vertical members **403**. The guard rail **120** assists in preventing a user from falling off the gangway **202**. The four vertical parallel members **403**, first set of three horizontal parallel members **405**, and second set of three horizontal parallel members **407** can be attached through the use of welding or with fasteners.

The second pipe **126**, third pipe **132A**, and fourth pipe **132B** or hoses run parallel to and alongside the tank car access platform frame **401** to flexible hoses **129A**, **129B**, and **129C** respectively. Each of the flexible hoses **129A**, **129B**, and

129C can contain an attachment valve **130** and an emergency shutdown valve. The use of the flexible hoses **129A**, **129B**, and **129C** allows for the change in the height of the tank car access platform **116**. Furthermore, flexible hoses **129A**, **129B**, and **129C** enable a user to attach the flexible hoses **129A**, **129B**, and **129C** to a rail tank car in the event that the portable material transfer unit **100** is not perfectly aligned with the rail tank car **302**. In the tank car access platform unloading position, as shown in Fig. 4A and 4B, the gangway **202** extends outside the perimeter of the mounting platform **102**, thereby allowing a user to access the top portion of the rail tank car **302**.

Fig. 5 depicts a side view of a method for transporting the portable material transfer unit **100** to an unloading site in accordance with an exemplary embodiment of the present invention. The portable material transfer unit **100** is attached to a motorized vehicle **502** through the use of a tow ball **504** that is connected to the motorized vehicle **502** and a tow hitch **104** that is attached to the portable material transfer unit **100**. Attaching the material transfer unit **100** to a motorized vehicle **502** allows the material transfer unit **100** to be moved from one rail tank car to another without the need to move the rail tank car. Furthermore, the mobility of the material transfer unit **100** allows for the unloading of material in areas that traditionally did not have tank car unloading services.

Fig. 6 depicts an overhead view of a method for transporting the portable material transfer unit **100** to an unloading site in accordance with an exemplary embodiment of the present invention. Prior to transporting the material transfer unit **100** on a highway or public access road, the tank car access platform **116** can be lowered to its lowered position, as shown in Fig. **4**A. Furthermore, the tank car access platform **116** can be slidably maneuvered into a transporting position on the material transfer unit **100**, so that the entire tank car access platform **116**, including the gangway **202**, is within the perimeter of the mounting platform **102**. The tank car access platform **116** can then be attached to the mounting platform **102** with multiple mounting plates **602** and fasteners **604**.

In conclusion, the present invention comprises a completely self contained, highway accessible, portable, material transfer unit **100**. The invention allows a user to take the material transfer unit **100** to any place accessible by a motorized vehicle, loosen the tank car access platform **116**, slidably adjust the tank car access platform **116** to the edge of the mounting platform **102**, fasten the tank car access platform **116** to the mounting platform **102**, and unload a material from a first storage medium to another storage medium. The user can then move the material transfer unit **100** to the next storage medium without the need and expense of a locomotive, rail yard, or terminal. Prior to returning the material transfer unit **100** to the highway, a user need only slidably adjust the tank access platform **116** back to its transporting position and fasten the tank access platform **116** to the mounting platform **102**.

It will be appreciated that the present invention fulfills the needs of the prior art described herein and meets the above-stated objectives. While there have been shown and described several exemplary embodiments of the present invention, it will be evident to those skilled in the art that various modifications and changes may be made thereto without departing from the spirit and the scope of the present invention as set forth in the appended claims and equivalence thereof.